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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Mark R. Parker

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Patent Documentation Center

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EXAMINER

HUNTSINGER, PETER K

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/892,027	Applicant(s) PARKER ET AL.	
	Examiner Peter K. Huntsinger	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/23/05 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa Patent 6,102,520, and in further view of Kadota Patent 6,166,824.

Referring to claims 1 and 4, Terasawa discloses a method for improving black print pixel quality in a color printer having at least one color ink and black ink, comprising: printing no more than two droplets at a single location (col. 12, lines 4-5); providing an image to be printed on a substrate (col. 2, lines 26-29); determining a location on a substrate where a black pixel is to be printed (col. 6, lines 46-51), printing a droplet of color ink at the location, and printing a droplet of black ink on top of the color droplet (col. 12, lines 4-5) at the same location (col. 12, lines 19-23), wherein the

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droplet of color ink and the droplet of black ink are of substantially the same size (Fig. 16A), forming a single black pixel having increased density of substantially the same size as each of the black and color droplets at the location when the two droplets solidify (col. 12, lines 16-18). As is shown in Fig. 16A, the black and color ink droplets are placed at the same location. The additional black ink droplet is one alternative of the invention. Terasawa does not disclose expressly increasing the space between rows and columns of the image. Kadota discloses selecting a fast mode, wherein fast print mode is accomplished by increasing droplet spacing to reduce the number of rows and columns that must be marked thereby increasing print speed (col. 2, lines 8-19). Terasawa and Kadota are combinable because they are from the same field of printing systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to increase the space between rows and columns of an image. The motivation for doing so would have been to increase the printing speed by reducing the amount of ink needed. Therefore, it would have been obvious to combine Kadota with Terasawa to obtain the invention as specified in claims 1 and 4.

Referring to claims 2 and 5, Terasawa discloses wherein the color printer includes cyan, magenta and yellow and wherein the step of printing a single droplet of color ink comprises printing a single droplet of one of cyan ink, magenta ink and yellow ink at each of the black locations (col. 14, lines 6-15).

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4. Claims 3, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa Patent 6,102,520 and Kadota Patent 6,166,824, as applied to claims 2 and 5 above, and further in view of Moriyama et al. Patent 6,312,102.

Referring to claim 3, Terasawa discloses determining a plurality of locations on a substrate where a black pixel is to be printed (col. 6, lines 46-51); printing a droplet of color ink at each of the locations and printing a droplet of black ink on top of each droplet of color ink at each black pixel location (col. 7, lines 9-13), wherein the droplet of color ink and the droplet of black ink are of substantially the same size (col. 12, lines 5-8). Terasawa does not disclose expressly equally distributing the color droplets.

Moriyama et al. disclose equally distributing color ink among black locations (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to equally distribute cyan, magenta, and yellow ink among black locations. The motivation for doing so would have been to consume the color inks at a consistent rate as the other colors. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 3.

Referring to claim 6, Terasawa discloses using cyan, magenta, and yellow ink at black locations but does not disclose expressly equally distributing the color droplets. Moriyama et al. disclose equally distributing color ink among black locations (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the

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invention, it would have been obvious to a person of ordinary skill in the art to equally distribute cyan, magenta, and yellow ink among black locations. The motivation for doing so would have been to consume the color inks at a consistent rate as the other colors. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 6.

Referring to claim 7, Terasawa discloses distributing one color ink drop among black locations but does not disclose expressly using bit patterns. Moriyama et al. disclose using 33.3% bit patterns for placing drops of cyan, magenta, or yellow (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize a bit pattern to determine which color ink droplet to use. The motivation for doing so would have been to reduce the amount of color ink used and to consume the different color inks at a consistent rate as the other color inks. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 7.

Referring to claim 8, Terasawa discloses distributing one color ink drop among black locations but does not disclose expressly using a stochastic halftone screen. Moriyama et al. disclose randomly choosing the color ink to distribute at black locations (col. 12, lines 2-12) and equally distributing color ink among black locations (Fig. 11, col. 19, lines 44-48). Terasawa and Moriyama et al. are combinable because they are from the same field of incremental printing of symbolic information. At the time of the

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invention, it would have been obvious to a person of ordinary skill in the art to randomly select the color ink to distribute at black locations and equally distribute cyan, magenta, and yellow ink among black locations. The motivation for doing so would have been to eliminate the regularity of a predetermined pattern and to consume the different color inks at a consistent rate as the other color inks. Therefore, it would have been obvious to combine Moriyama et al. with Terasawa to obtain the invention as specified in claim 8.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa Patent 6,102,520 and Kadota Patent 6,166,824, as applied to claim 5 above, and further in view of Moriyama et al. Patent 6,312,102 and Fukasawa Patent 6,466,332.

Referring to claim 9, Terasawa discloses distributing one color ink drop among black locations but does not disclose expressly using a halftone screen to determine color ink distribution. Moriyama et al. disclose equally distributing cyan, magenta, and yellow ink at black locations based on a pattern (Fig. 11, col. 19, lines 44-48).

Moriyama et al. does not disclose expressly using a halftone screen to determine which of cyan, magenta, and yellow to print. Fukasawa discloses using a halftone screen to determine the amount of color ink, using

$$K = \text{MIN}(C, M, Y) \text{ (col. 15, lines 1-5)}$$

$$C = C - K$$

$$M = M - K$$

$$Y = Y - K \text{ (ST6 of Fig. 1, col. 11, lines 3-11)}$$

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$$C=C+(C.\text{sub.}--\text{PER}*K)$$

$$M=M+(M.\text{sub.}--\text{PER}*K)$$

$$Y=Y+(Y.\text{sub.}--\text{PER}*K) \text{ (col. 2, lines 41-47).}$$

Terasawa, Moriyama et al., and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to equally distribute cyan, magenta, and yellow at black locations according to a pattern as disclosed by Moriyama et al., and to generate a pattern using a halftone screen as disclosed by Fukasawa. The motivation for doing so would have been to produce an unremarkable black color and to consume the different color inks at a consistent rate as the other color inks. Further, Moriyama et al. discloses the method of distributing color ink according to a pattern and Fukasawa simply discloses a process for generating a pattern. Therefore, it would have been obvious to combine Moriyama et al. and Fukasawa with Terasawa to obtain the invention as specified in claim 9.

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa Patent 6,102,520 and Kadota Patent 6,166,824, as applied to claim 5 above, and further in view of Fukasawa Patent 6,466,332.

Referring to claim 10, Terasawa discloses distributing color ink drop among black locations but does not disclose expressly determining the color ratio by gray balancing. Fukasawa discloses determining the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black droplets by gray balancing (col. 7, lines 31-34).

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Terasawa and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to determine the color ratio to distribute color ink at black locations by gray balancing. The motivation for doing so would have been to produce an unremarkable black color. Therefore, it would have been obvious to combine Fukasawa with Terasawa to obtain the invention as specified in claim 10.

Referring to claim 11, Terasawa discloses distributing color ink drop among black locations but does not disclose expressly determining the color ratio to minimize the chromaticity in black. Fukasawa discloses adjusting the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black so as to minimize chromaticity in the black (col. 2, lines 41-49). Terasawa and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it would have been obvious to a person of ordinary skill in the to adjust the ratio of color ink to minimize the chromaticity of black. The motivation for doing so would have been to produce an unremarkable black color. Therefore, it would have been obvious to combine Fukasawa with Terasawa to obtain the invention as specified in claim 11.

Referring to claim 12, Terasawa discloses distributing color ink drop among black locations but does not disclose expressly determining the color ratio to minimize the chromaticity in black. Fukasawa discloses adjusting the ratio of cyan droplets, magenta droplets and yellow droplets printed with the black so as to minimize chromaticity in the black (col. 2, lines 41-49). Terasawa and Fukasawa are combinable because they are from the same field of determining black color generation. At the time of the invention, it

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would have been obvious to a person of ordinary skill in the to adjust the ratio of color ink to minimize the chromaticity of black. Applicant has not disclosed that the using a ratio of cyan droplets that is approximately 31%, a ratio of magenta droplets that is approximately 38% and a ratio of yellow droplets that is approximately 31% provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with adjusting the ratio of color ink to reduce chromaticity because both provide the same benefit of reducing the chromaticity in black. Therefore, it would have been obvious to combine Fukasawa with Terasawa to obtain the invention as specified in claim 12.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter K. Huntsinger whose telephone number is (571)272-7435. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on (571)272-7471. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PKH

A handwritten signature in black ink, appearing to be 'P. K. H.', written in a cursive style.A handwritten signature in black ink, appearing to be 'KAW Williams', written in a cursive style.

**KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER**